D. ESV Licensing Considerations

1. Blanket Licensing of Earth Stations

114. *Background.* In the *ESV NPRM*, the Commission sought comment on whether ESV networks should be permitted to operate via our CSAT[301] and VSAT blanket licensing procedures under Part 25 of our rules.[302] The Commission considered this approach appropriate because the number and mobility of ESV locations would make it impractical to license ESVs on a site-by-site basis.[303]

115. *Discussion.* We adopt a blanket licensing approach that is consistent with the approach used for CSATs and VSATs, but that also takes into account the unique operational characteristics of ESVs. We find that adopting a blanket licensing approach specifically addressing C- and Ku-band ESV operations allows for the expeditious processing of ESV licenses and accommodate spectrum uses planned by ESV operators. Blanket licensing also is preferable to individually licensing ESV earth stations,[304] as ESV operators will likely deploy large numbers of technically identical earth stations that will operate over a wide geographic area.[305] Most commenters support our proposal regarding blanket licensing.[306]

116. To ensure that the rules we adopt today are readily implemented and enforceable, we will issue an ESV system license (consisting of a hub and/or blanket earth station license) to applicants who demonstrate that they are capable of controlling all aspects of the ESV network.[307] By making the ESV system licensee responsible for meeting the operational considerations we adopt today, we ensure the protection of other in-band and out-of-band licensees. As noted above, C-band ESV operators must

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[301] In May 2001, the Commission amended Part 25 of its rules to allow operators to obtain licenses for a limited class of CSAT earth station networks under a single authorization. *See CSAT Order*, 16 FCC Rcd 11511, *terminating proceeding*, *CSAT Second Order*, 17 FCC Rcd 2002.

[302] *ESV NPRM*, 18 FCC Rcd at 25268, ¶ 48 & 25282-83, ¶¶ 84-86.

[303] *ESV NPRM*, 18 FCC Rcd at 25268, ¶ 48.

[304] We see the demand for individual (as opposed to network) ESV earth station use as limited and because there was no comment on the need for individual earth station licensing, we decline to adopt such a provision in this *Order*. *See, e.g.*, *ESV NPRM*, 18 FCC Rcd at 25269, ¶ 52.

[305] Stratos Comments at 19 *see also* Boeing Comments at 19; Inmarsat Comments at 13; Intelsat Comments at 2-3, 5; SES Americom Comments at 6; PanAmSat Comments at 3; Telnor Comments at 2; SOI Comments at 9; Stratos Comments at 19; Stratos Reply at 13; SES AMERICOM Reply at 5. We recognize that there may be instances where ESV operators do not own or operate their own Network Operating Centers or Satellite Hub Earth Stations. In any event, we will require both C- and Ku-band ESV operators to conform to our rules regarding hub operations in the United States. *See* 47 C.F.R. §§ 25.271, 25.221 & 25.222.

[306] *See, e.g.*, Broadband Maritime Comments at 5; MTN Reply at 10; PanAmSat Comments at 5; SES AMERICOM Comments at 6-7; Stratos Comments at 19-20.

[307] We will not authorize ESVs unless they comply with the rules we adopt today and can be directly shut down by a control point in the United States. *See* Appendix B (new Sections 25.221(c)(3) & 25.222(c)(3)). We also note that an ESV operator will be required to obtain the applicable Commission authorizations if that operator intends to provide global facilities-based and resale telecommunications services and/or Inmarsat services. *See, e.g., Maritime Telecommunications Network, Inc.*, File Nos. ITC-214-19970131-00052 (granting MTN the ability to provide facilities-based and resale phone service under Section 63.18(e)(1) and (e)(2) of the Commission's rules) and ITC-214-19970506-00253 (granting MTN the ability to provide INMARSAT Mobile Satellite Service).

coordinate their operations with the fixed service.[308] Therefore, C-band ESV licenses will be conditioned in a manner that requires C-band ESV operation within 200 km of any port to be coordinated with FS operations.

117. Consistent with all of the findings of this *Order*, we adopt Sections 25.221 and 25.222, modify Sections 25.115, 25.130, 25.201-.205, 25.271, and 25.277, and revise Part 25 of the Commission's rules accordingly.[309] Furthermore, we delegate authority to the International Bureau to revise its earth station license application procedures and related forms to conform to the rules we adopt today. Specifically, we note that the information requested on Form 312 will need to be altered. There are, moreover, additional and ongoing rulemakings that may also require modifications to Form 312. Because we intend to modify Form 312 only after all the applicable rulemakings have been completed, there will be a period of time after the effective date of this Order during which Form 312 will not be altered to accommodate ESV applications. In the interim, ESV applicants should utilize Form 312 and submit attachments providing the relevant information and certifications reflected in the rules we adopt today.

2. License Term

118. We adopt the tentative conclusion we reached in the *ESV NPRM* to license ESV operations for a term of fifteen years.[310] We agree with commenters who argue that this license term provides ESVs with regulatory certainty.[311] Moreover, a fifteen year license term is consistent with our licensing approach for other networks of earth stations.[312] We find no compelling reason to shorten this licensing term or otherwise treat ESV licensees any differently than other earth station licensees. In particular, we disagree with FWCC that a shorter license term of two years with case-by-case renewals "provides the needed mechanism for ongoing enforcement, given the transient nature of ESV operation."[313] We find that the enforcement remedies available to the Commission will adequately resolve any interference actions brought by FS licensees throughout an ESV operator's license term, regardless of its length. In addition, the operational requirements set forth in this *Order* for ESVs fully protects FS operators from harmful interference, regardless of license term.

E. Regulation of ESV Operations Based on Vessel Country of Registry

119. As set forth in detail above, ESVs are a mobile application of FSS technology and, therefore, have a higher potential for creating interference to terrestrial and space systems than other FSS applications operating in the same frequencies. We have crafted the rules in this item with the goal of controlling this potential interference to other co-frequency applications. There are three very important

[308] *See supra* Section III.B.2.

[309] *See* Appendix B.

[310] In the *ESV NPRM*, the Commission tentatively concluded that authorized ESV operations would be licensed for fifteen year terms and sought comment on alternative license terms. *ESV NPRM*, 18 FCC Rcd at 25271 & 25285 ¶¶ 58 & 92.

[311] MTN Comments at 15; *see also* Inmarsat Comments at 23; Stratos Comments at 15.

[312] *ESV NPRM*, 18 FCC Rcd at 25271, ¶ 58 (citing 47 C.F.R. § 25.121); *see also* MTN Comments at 26; Boeing Comments at 31; Intelsat Comments at 7; MTN Reply at 10.

[313] *See* FWCC Reply at 22; FWCC Comments at 13. In fact, Stratos argues that a two-year license term, along with other restrictions proposed by FWCC, is too burdensome. Stratos Reply at 7.

regulatory factors related to the technical rules under which ESVs must operate: the vessel's country of registry; the country in which an ESV hub is located; and the physical location of the vessel if a claim of interference occurs. This section addresses the U.S. requirements that apply to ESV operations under possible combinations of these factors.

1. U.S.-Registered Vessels

120. Under the Communications Act and ITU Radio Regulations,[314] the Commission is responsible for licensing the ESV operations of all U.S.-registered vessels, other than by stations owned and operated by the Federal Government. As a result, we are concerned about the potential for interference that may be caused by ESVs operating on U.S.-registered vessels. For this reason, to comply with the requirements of Section 25.271 of our rules, U.S.-registered vessels operating ESVs must have a point of contact within the United States that will have the capability and authority to cause an ESV on a U.S.-registered vessel to cease transmitting.[315] This obligation applies regardless of whether or not the hub through which the ESV communicates is in the United States, and without concern for the location of the vessel (*i.e.*, in U.S. waters, international waters, or waters controlled by a foreign administration). Specifically, the point of contact must have a direct connection to the hub's network functions controlling the U.S. vessels.

121. ESVs operating on U.S.-registered vessels must operate in accordance with our technical rules in U.S. and international waters. To ensure that these ESV operations do not present a risk of harmful interference to radio operations in other countries, we also set forth procedures concerning operations by Commission-licensed ESVs near the coasts of other countries.[316] Prior to operations within the distances to a foreign administration's coast line specified in Resolution 902, the ESV operator must ascertain whether the relevant administration may have operations that could be affected by ESVs, and determine whether those administrations have adopted specific requirements concerning ESV operations. Once the vessel enters foreign waters, the ESV must operate under our technical rules, or those of the foreign administration, which ever is more constraining.[317] To the extent that all relevant administrations have identified geographic areas from which ESV operations would not affect their radio operations, ESV operators would be free to operate within those identified areas without further action.

2. Non-U.S.-Registered Vessels Communicating with U.S. Hubs

122. Section 306 of the Communications Act provides that the Commission does not have the authority to license radio stations, such as ESVs, on vessels registered by foreign administrations (foreign-registered vessels).[318] Both Sections 301 and 306 of the Communications Act, however, give the

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[314] *See* 47 U.S.C. § 301(e); ITU RR 18.8.

[315] *See* 47 C.F.R. § 25.271.

[316] The Commission sought comment on the licensing of ESVs on board U.S. flagged ships that travel on the high seas or near the coast of other countries. *See ESV NPRM*, 18 FCC Rcd at 25289, ¶ 102.

[317] We also encourage bilateral arrangements between the United States and the foreign administration that would spell out the specific technical rules that an ESV must meet in foreign waters. In this regard, we note that a there are a number of regional efforts underway, in Europe and the Americas, to develop requirements for ESV operations, consistent with the framework of Resolution 902. These efforts are likely to provide greater certainty for ESV operators as to the geographic areas in which their operations may affect other radio operations.

[318] "Section 301 of this Act shall not apply to any person sending radio communications or signals on a foreign ship while the same is within the jurisdiction of the United States, but such communications or transmission shall be (continued....)

Commission the authority and responsibility to adopt regulations to protect U.S.-licensed radio communications systems from receiving harmful interference from these vessels.[319] Given the likelihood that U.S. hub operators will communicate with ESVs on foreign-registered vessels, and particularly in U.S. waters, we adopt certain measures to protect U.S. satellite and terrestrial licensees.[320]

123. One approach would be to prohibit operations by ESVs on ships of foreign registry near U.S. coasts, and to prohibit U.S. hub stations from serving such ESVs. We conclude that this approach would be overly restrictive and contrary to Resolution 902, which "encourages concerned administrations to cooperate with administrations that license ESVs."[321] Bilateral agreements between the United States and the relevant administrations of foreign-registered vessels would also ensure U.S. licensees adequate protection from ESVs on foreign-registered vessels. We conclude that, if the United States has entered into a bilateral agreement with a ship's licensing administration, permitting U.S. hub operators to communicate with ESVs operating on board a foreign-registered vessel consistent with that agreement is in the public interest.[322] As we noted in the *ESV NPRM*, this approach promotes the agreement reflected in Recommendation 37 at WRC-03.[323]

124. Absent a bilateral agreement, we require that an ESV operator using a U.S. hub to communicate with ESVs on foreign-registered vessels be responsible for ensuring that the operations of the ESVs comply with all of our rules, including but not limited to coordination with FS in the C-band.[324] Failure to do so could result in sanctions, including possible license forfeiture. Accordingly, the ESV operator communicating with foreign-registered vessels through a U.S. hub must have a point of contact with the capability to terminate transmissions of ESVs that cause interference or otherwise fail to comply with the rules we adopt in this Order.[325] Licensing ESV operators in a manner that requires such control over all ESVs with which the hub communicates ensures an environment where potential interference can be properly managed.[326]

125. We disagree with those commenters who support prohibiting U.S. ESV hubs from communicating with ESVs on foreign-registered vessels if no bilateral agreement exists between the

(Continued from previous page)
transmitted only in accordance with such regulations designed to prevent interference as may be promulgated under the authority of this Act." 47 U.S.C. § 306. *See also MTN Order*, 15 FCC Rcd at 23214-15, ¶ 9; *MTN Reconsideration Order*, 16 FCC Rcd at 11620, ¶ 13 & 11630 ¶ 46.

[319] 47 U.S.C. §§ 301, 306.

[320] The Commission sought comment on how to treat ESVs on vessels of foreign registry that communicate with a U.S.-licensed hub operator under our rules. *ESV NPRM*, 18 FCC Rcd at 25288-89, ¶¶ 100-102.

[321] ITU-R Resolution 902 (WRC-03).

[322] Stratos Comments at 22; Boeing Comments at 24; MTN Comments at 32.

[323] *See* ITU-R Resolution 902 (WRC-03) & Recommendation 37.

[324] Many commenters agree that U.S. hubs should be able to communicate with ESVs on foreign-registered vessels. *See* MTN Comments at 32; Boeing Comments at 24; Stratos Comments at 22; Pinnacle Comments at 6; Inmarsat Comments at 25; Broadband Maritime Comments at 7-8. *Cf.* Boeing Comments at 25 (noting that under this scenario, a foreign-registered ESV would be associated with a U.S. ESV license when it is operating within the appropriate coordination distances of the United States).

[325] *See, e.g.*, 47 C.F.R. § 25.271.

[326] Inmarsat Comments at 24.

United States and the country of foreign registry.[327] Given the fact that the relevant bilateral negotiations have yet to begin, adopting this approach would have the same effect as limiting ESV communications to ships of U.S. registry.[328] Furthermore, the demand for ESV service on ships of foreign registry within U.S. territorial waters is likely to be high given the high traffic in U.S. ports and the industries that these ships serve. Requiring a bilateral agreement to be in place prior to operation, when negotiations on such agreements have not yet begun, would deny ESV operators access to a significant portion of this market.

126. In summary, so long as the ESV operators, through the U.S. hub, maintain control over the remote ESV operations, we find that ESVs on foreign-registered vessels communicating through a U.S. hub should be afforded the same rights and be subject to the same restrictions as those on U.S.-registered vessels while within 200 km of U.S. coastlines or FS offshore installations for C-band operations (*i.e.*, the distance triggering our coordination obligations) and within 125 km of U.S. coastlines for Ku-band operations (*i.e.*, the ITU Resolution 902 demarcation point beyond which Ku-band ESVs can operate without prior agreement of any administration). These ESVs should operate in accordance with our technical rules in international waters and beyond 200 km of U.S. coastlines or FS offshore installations for C-band operations and 125 km of U.S. coastlines for Ku-band operations as well. We encourage bilateral arrangements that will delineate the specific technical rules that an ESV on foreign-registered vessels communicating through a U.S. hub must meet when operating in the waters of foreign administrations.

3. Non-U.S.-Registered Vessels Communicating with Non-U.S. Hubs

127. Article 4 of the ITU Radio Regulations sets forth the general international principles and rules regarding the assignment and use of frequencies. ITU Radio Regulation 4.4 (ITU RR 4.4) permits licensing of services that do not otherwise conform to the Radio Regulations so long as those services do not cause interference to, or claim protection from interference by, other services licensed in compliance with the Radio Regulations.[329] We expect some administrations to authorize ESV operations on its registered vessels based solely on ITU RR 4.4.

128. We permit both C- and Ku-band ESVs to operate on foreign-registered vessels through hubs located outside of the United States within 300 km of the U.S. coastline under the following two conditions.[330] First, where there is a bilateral agreement between the United States and the administration of country in which the hub is located, we will permit ESVs operations under the terms of

[327] *See* FWCC Reply at 26; NRAO Comments at 3.

[328] *See* Telnor Reply at 11; Inmarsat Comments at 24-25.

[329] The full text of ITU RR 4.4 reads as follows: "Administrations of the Member States shall not assign a station to any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to , and shall not claim protection from harmful interference caused by, as station operating in accordance with the provisions of the Constitution, the Convention and these Regulations."

[330] The Commission sought comment on the treatment of ESVs that operate on vessels registered with foreign administrations through hubs located outside of the United States. *ESV NPRM*, 18 FCC Rcd at 25290, ¶ 103. We noted under Resolution 902, Annex 1 "[a]ny transmission from ESVs within the minimum distances shall be subject to the prior agreement of the concerned administration(s)," and that the United States is a concerned administration in the 5925-6425 MHz and 14.0-14.5 GHz Bands. *Id.* (*citing* ITU-R Resolution 902 (WRC-03) Annex 1). The Commission also noted that ESVs may be authorized internationally in these bands pursuant to ITU RR 4.4 and as such, can operate so long as they "not claim protection from, nor cause interference to, other services having allocations in these bands."

the agreement.[331] Second, we will permit ESV operations under ITU RR 4.4 provided the vessel's registering administration has authorized those operations under ITU RR 4.4.[332] We expect that any ESV operating pursuant to ITU RR 4.4 will not cause interference to the operations of any U.S. licensee. Once the Commission is aware that an administration has authorized ESV operations under ITU RR 4.4, we will actively engage that administration in reaching a bilateral agreement in a manner that is consistent with the rules we adopt in this Order.[333] We expect that any bilateral agreement will specify a point-of-contact for the cessation of transmission from the ESV and the technical parameters under which the ESV must operate while within 300 km of the U.S. coast. If none of these conditions apply, the vessel is not permitted to operate ESVs within 300 km of the U.S. coastline. Should we find evidence that ESVs on foreign-registered vessels communicating with non-U.S. hubs cause interference to any U.S.-licensed satellite or terrestrial system, we will take all appropriate actions, including requesting that the appropriate foreign administration require the foreign-registered vessel to cease further ESV operations within 300 km of the U.S. coastline.

IV. CONCLUSION

129. Our action today promotes market-based deployment of broadband technologies to consumers traveling on the open seas and waterways in and around the United States and its territories. In this *Report and Order*, we adopt licensing rules and operational requirements to authorize ESV operations in both the C- and Ku- bands. This authority provides regulatory certainty to all licensees in these bands by elevating ESV operational status from temporary to licensed authority. We acknowledge the unique character of ESVs as a primary application in the FSS with mobile capabilities, and require ESV operations to protect incumbent FS, FSS and a limited number of Government operations. As such, this *Report and Order* permits operations in the C-band, while encouraging greater use of the Ku-band by affording Ku-band ESV licensees greater rights and fewer regulatory restrictions. Finally, we recognize the international character of ESV networks and set forth a framework for U.S.- and foreign-licensed ESVs in conformance with both the Communications Act and international accords on ESV operations.

V. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Certification

130. The Regulatory Flexibility Act of 1980, as amended (RFA),[334] requires that a regulatory flexibility analysis be prepared for notice-and-comment rule making proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[335] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[336]

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[331] *See* Inmarsat at 26.

[332] *See, e.g.*, Boeing Comments at 25; Inmarsat Comments at 26.

[333] We encourage foreign administrations to raise any matters that may not comport with the rules and operating restrictions adopted in this Order as appropriate for treatment in bilateral agreements with the United States.

[334] The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[335] 5 U.S.C. § 605(b).

[336] 5 U.S.C. § 601(6).

In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[337] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the U.S. Small Business Administration (SBA).[338]

131. The *IRFA* included a wide range of possible licensees that might be affected by the proposals contained in the *ESV NPRM.*[339] In light of the rules adopted in the *ESV Order,* we believe that there are only two categories of licensees that would be affected by the new rules. These categories of licensees are Satellite Telecommunications and Fixed-Satellite Transmit/Received Earth Stations. The SBA has developed a small business size standard for Satellite Telecommunications, which consists of all such companies having $12.5 million or less in annual revenue.[340] Currently there are approximately 3,390 operational fixed-satellite transmit/received earth stations authorized for use in the C- and Ku-bands. The Commission does not request or collect annual revenue information, and thus is unable to estimate the number of earth stations that would constitute a small business under the SBA definition. Of the two classifications of licensees, we estimate that only 15 entities will provide ESV service.

132. Pursuant to the RFA, the Commission incorporated an Initial Regulatory Flexibility Analysis (IRFA) into the *ESV NPRM.*[341] In the IRFA, the Commission tentatively concluded that the proposals contained in the *ESV NPRM* were the least burdensome alternatives for all entities, both large and small. We received no comments in response to the IRFA. For the reasons described below, we now certify that the policies and rules adopted in this *Report and Order* will not have a significant economic impact on a substantial number of small entities.

133. In 2003, the Commission adopted the *ESV NPRM* seeking comments on its proposals to license Earth Stations on Vessel (ESV) hub stations for operation in both the Ku-band and the C-band. In this *Report and Order*, the Commission establishes licensing and service rules for ESVs operating in the 5925-6425 MHz/3700-4200 MHz (C-band) and 14.0-14.5 GHz/11.7-12.2 GHz (Ku-band) frequencies.[342] These rules allow ESV operations in the C- and Ku-bands, while ensuring that ESVs protect fixed services (FS), fixed-satellite service (FSS) operators, and a limited number of Government operations in these bands from harmful interference.

134. ESVs have been used for the past several years to provide telecommunications services, including internet access, to cruise ships, merchant ships, ferries, barges, yachts, and U.S. navy vessels –

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[337] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[338] 15 U.S.C. § 632.

[339] *ESV NPRM*, 18 FCC Rcd at 25304-08, Appendix B. The Commission listed the categories of small entity licensees that could be affected by the proposed rules as follows: Satellite Telecommunications; Space Stations (Geostationary); Fixed Satellite Transmit/Receive Earth Stations; Cellular and Other Wireless Telecommunications; and Paging.

[340] 13 C.F.R. § 121.201, NAICS code 517410.

[341] *ESV NPRM*, 18 FCC Rcd at 25304-08, Appendix B.

[342] We also include a portion of the extended Ku-band (10.95-11.2 GHz and 11.45-11.7 GHz) in our decision today.

i.e., any marine craft large enough to meet reasonable size requirements and safely carry a stabilized satellite dish. Licensing ESV operations advances the Commission's goals and objectives for market-driven deployment of broadband technologies. The market for broadband via satellite-based communications continues to expand. As ESV operators deploy increasingly innovative broadband services to their subscribers, the rules will assure that, through ESVs, broadband services are available to businesses and consumers on the high seas, coastlines, and inland waterways.

135. In this *Report and Order*, the Commission imposes certain technical conditions on ESV operations as an application of the FSS with mobile capabilities. By allowing ESVs to continue operations in the C-band, the Commission strikes the appropriate balance of ESV and FS interests by adopting strict operational requirements for ESVs in the C-band that will ensure that incumbent and future FS operators are protected from harmful interference. The Commission imposes fewer operational restrictions in the Ku-band than in the C-band because ESVs are less likely to cause harmful interference to incumbent services in that band. The Commission encourages ESV operators to utilize the Ku-band for their operations wherever possible through enhanced rights and limited regulation in that band. Given the relatively limited presence of FS users in the 11.7-12.2 GHz band and the Commission belief that the proliferation of Ku-band satellites are making Ku-band spectrum more accessible and reliable, the Commission views the Ku-band as an ideal operational environment for future ESV growth. The availability of Ku-band spectrum for non-coordinated use could help reduce costs to both large and small entities. We believe that it will have no significant economic impact on small entities because ESV operators will have the ability to choose the spectrum (C- or Ku-band) that meets their needs and will not be precluded from being licensed in each band. In addition, permitting this flexibility will greatly reduce interference problems.

136. In both C- and Ku-bands, the Commission requires ESV operators to protect FSS incumbents through limits on off-axis effective isotropically radiated power (e.i.r.p.) density and to cease operations if the ESV antenna drifts more than 0.2 degrees from the target satellite.[343] We also require operators in both bands to collect and maintain vessel tracking data to assist in identifying and resolving sources of interference. The Commission also provides for independent licensing of ESV hub stations and blanket licensing for ESV earth stations in order to give both C- and Ku-band ESV operators greater flexibility in structuring their operations. Finally, consistent with ITU encouragement of administrative cooperation in reaching agreements on the use of ESV systems,[344] the Commission established a regulatory framework that will enable foreign-licensed ESVs to operate near the United States without causing harmful interference to domestic operations. Again, a flexible approach will benefit all entities, and the requirements should not have a significant economic impact on small entities.

137. ESV operators are required to establish a database for tracking the location of ESV remote earth stations and to maintain a point of contact for resolving possible claims of harmful interference. The Commission does not expect small entities to incur significant costs associated with this requirement. The new licensing rules will benefit both large and small entities by streamlining the process for obtaining authority from the Commission to provide ESV service. Licensees will have certainty in the provision of service because the new rules will provide license terms of 15 years rather

[343] In this *Report and Order*, the Commission adopts footnotes to the U.S. Table of Frequency Allocations to recognize ESVs as an application of the FSS with primary status. In doing so, the Commission implements, in part, the decision reached at the International Telecommunication Union's (ITU's) 2003 World Radiocommunication Conference (WRC-03), which added a footnote to the International Table of Frequency Allocations stating that, in the 5925-6425 MHz and 14.0-14.5 GHz bands, ESVs may communicate with FSS space stations.

[344] ITU-R Resolution 902 (WRC-03).

than the current procedure whereby a licensee receives temporary authorization for 6 months. In addition, the new rules provide a simplified means of resolving issues of harmful interference. Small entities will benefit from the flexibility of being able to operate in the Ku-band where there are very few restrictions. We believe these requirements are nominal and do not impose a significant economic impact on small entities.

138. Therefore, we certify that the requirements adopted in this *Report and Order* will not have a significant economic impact on a substantial number of small entities.

139. **Report to Congress**: The Commission will send a copy of the Order, including a copy of the Final Regulatory Flexibility Certification, in a report to Congress.[345] In addition, the Commission will send a copy of the Order, including a copy of the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the SBA. A copy of the Order and Final Regulatory Flexibility Certification will also be published in the Federal Register.[346]

B. Final Paperwork Reduction Act of 1995 Analysis

140. This *Report and Order* contains either new or modified information collections subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the modified information collection contained in this proceeding.

141. All comments regarding the requests for approval of the information collection should be submitted to Judith B. Herman, Federal Communications Commission, Room 1-C804, 445 12th Street, SW, Washington, DC 20554, or via the Internet to Judith-B.Herman@fcc.gov, phone 202-418-0214.

VI. ORDERING CLAUSES

142. IT IS ORDERED that, pursuant to Sections 4(i), 7, 302(a), 303(c), 303(e), 303(f) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157, 302(a), 303(c), 303(e), 303(f) and 303(r), the *Report and Order* IS ADOPTED and that Parts 2, 25, and 101 of the Commission's Rules ARE AMENDED, as specified in Appendix B, effective 30 days after publication in the Federal Register. The collection of information contained herein is contingent upon approval by the Office of Management and Budget.

143. IT IS FURTHER ORDERED that the Regulatory Flexibility Certification, as required by Section 604 of the Regulatory Flexibility Act and as set forth above, IS ADOPTED.

[345] *See* 5 U.S.C. § 801(a)(1)(A).

[346] *See* 5 U.S.C. § 605(b).

144. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Report and Order*, including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

List of Commenters

Comments
Association of Public-Safety Communications Officials-International, Inc.
The Boeing Company
Broadband Maritime Inc.
Cornell University
Fixed Wireless Communications Coalition
Inmarsat Ventures Ltd.
Intelsat Global Service Corporation
King County
Maritime Telecommunications Network
National Academies' Committee on Radio Frequencies
National Radio Astronomy Observatory
National Spectrum Managers Association
PanAmSat Corporation
Pinnacle Telecom Group
Schlumberger Omnes, Inc.
SES AMERICOM, Inc.
Stratos Offshore Services Co.
Tachyon Networks Incorporated
Telenor Satellite Services, Inc.

Reply Comments
Alcatel
American Petroleum Institute
Association of American Railroads
The Boeing Company
Broadband Maritime Inc.
County of Los Angeles
Fixed Wireless Communications Coalition
Intelsat Global Service Corporation
Maritime Telecommunications Network
National Spectrum Managers Association
SES AMERICOM, Inc.
Stratos Offshore Services Co.
Telenor Satellite Services, Inc.

Ex Parte Letters
The Boeing Company
Broadband Maritime Inc.
Fixed Wireless Communications Coalition
Maritime Telecommunications Network
National Spectrum Managers Association

Other Filings
Fixed Wireless Communications Coalition (Motion to Strike)

APPENDIX B

Final Rules

For the reasons discussed above, the Federal Communications Commission amends 47 C.F.R. parts 2, 25 and 101, as follows:

PART 2 --FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended as follows:

a. Revise pages 55, 57, 64 and 66.

b. In the list of international footnotes, revise footnotes 5.457B, 5.487, 5.487A, and 5.488; and remove footnote 5.491.

c. In the list of non-Federal Government footnotes, add footnotes US180, US181, US182, US183 and US184.

§ 2.106 Table of Frequency Allocations.

The revisions and additions read as follows:

* * * * *

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
See previous page for 3600-4200 MHz	3700-4200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile		3700-4200	3700-4200 FIXED NG41 FIXED-SATELLITE (space-to-Earth) NG180	International Fixed (23) Satellite Communications (25) Fixed Microwave (101)
4200-4400 AERONAUTICAL RADIONAVIGATION 5.438 5.439 5.440			4200-4400 AERONAUTICAL RADIONAVIGATION 5.440 US261		Aviation (87)
4400-4500 FIXED MOBILE			4400-4500 FIXED MOBILE	4400-4500	
4500-4800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE			4500-4800 FIXED MOBILE US245	4500-4800 FIXED-SATELLITE (space-to-Earth) 5.441 US245	
4800-4990 FIXED MOBILE 5.442 Radio astronomy			4800-4940 FIXED MOBILE US203 US342	4800-4940 US203 US342	
			4940-4990	4940-4990 FIXED MOBILE except aeronautical mobile	Private Land Mobile (90) Fixed Microwave (101)
5.149 5.339 5.443			5.339 US311 US342 G122	5.339 US311 US342	
4990-5000 FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY Space research (passive) 5.149			4990-5000 RADIO ASTRONOMY US74 Space research (passive) US246		
5000-5150 AERONAUTICAL RADIONAVIGATION 5.367 5.443A 5.443B 5.444 5.444A			5000-5250 AERONAUTICAL RADIO-NAVIGATION US260	5000-5150 AERONAUTICAL RADIO-NAVIGATION US260 5.367 5.444A US211 US344 US370	Satellite Communications (25) Aviation (87)

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
5570-5650 MARITIME RADIONAVIGATION MOBILE except aeronautical mobile 5.446A 5.450A RADIOLOCATION 5.450B 5.450 5.451 5.452			5570-5600 MARITIME RADIONAVIGATION US65 RADIOLOCATION G56 US50 G131 5600-5650 MARITIME RADIONAVIGATION US65 METEOROLOGICAL AIDS RADIOLOCATION G56 5.452 US50 G131	5570-5600 MARITIME RADIONAVIGATION US65 RADIOLOCATION US50 5600-5650 MARITIME RADIONAVIGATION US65 METEOROLOGICAL AIDS RADIOLOCATION 5.452 US50	RF Devices (15) Maritime (80) Private Land Mobile (90)
5650-5725 RADIOLOCATION MOBILE except aeronautical mobile 5.446A 5.450A Amateur Space research (deep space) 5.282 5.451 5.453 5.454 5.455			5650-5925 RADIOLOCATION G2	5650-5830 Amateur 5.150 5.282	RF Devices (15) ISM Equipment (18) Amateur (97)
5725-5830 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur 5.150 5.451 5.453 5.455 5.456	5725-5830 RADIOLOCATION Amateur 5.150 5.453 5.455				
5830-5850 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.451 5.453 5.455 5.456	5830-5850 RADIOLOCATION Amateur Amateur-satellite (space-to-Earth) 5.150 5.453 5.455			5830-5850 Amateur Amateur-satellite (space-to-Earth) 5.150	ISM Equipment (18) Amateur (97)
5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 5.150	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Amateur Radiolocation 5.150	5850-5925 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Radiolocation 5.150	5.150 US245	5850-5925 FIXED-SATELLITE (Earth-to-space) US245 MOBILE NG160 Amateur 5.150	ISM Equipment (18) Private Land Mobile (90) Personal Radio (95) Amateur (97)
5925-6700 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE			5925-6425	5925-6425 FIXED NG41 FIXED-SATELLITE (Earth-to-space) NG181	International Fixed (23) Satellite Commun. (25) Fixed Microwave (101)

10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A MOBILE except aeronautical mobile		10.7-11.7 US211	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 US211 US355 NG104 NG182	Satellite Communications (25) Fixed Microwave (101)
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE	11.7-12.1 FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A Mobile except aeronautical mobile 5.485 5.488	11.7-12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE	11.7-12.7	11.7-12.2 FIXED-SATELLITE (space-to-Earth) NG143 NG145 NG183 5.488	Satellite Communications (25)
	12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.485 5.488 5.489	5.487 5.487A 5.492			
5.487 5.487A 5.492	12.2-12.7 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE	12.2-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING 5.484A 5.487		12.2-12.7 FIXED BROADCASTING-SATELLITE	Satellite Communications (25) Fixed Microwave (101)
12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.494 5.495 5.496	5.487A 5.488 5.490 5.492 See next page for 12.7-12.75 GHz	12.5-12.75 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493	See next page for 12.7-12.75 GHz	5.487A 5.488 5.490	See next page for 12.7-12.75 GHz

14-14.25 FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B 5.457B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504C 5.506A Space research 5.504A 5.505			14-14.2 RADIONAVIGATION US292 Space research	14-14.2 FIXED-SATELLITE (Earth-to-space) NG183 RADIONAVIGATION US292 Mobile-satellite (Earth-to-space) Space research	Satellite Communications (25) Maritime (80) Aviation (87)
14.25-14.3 FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.457B 5.506B RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.506A 5.508A Space research 5.504A 5.505 5.508 5.509			14.2-14.4	14.2-14.47 FIXED-SATELLITE (Earth-to-space) NG183 Mobile-satellite (Earth-to-space)	Satellite Communications (25)
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.506B 5.457A 5.457B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Radionavigation-satellite 5.504A	14.3-14.4 FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B Mobile-satellite (Earth-to-space) 5.506A Radionavigation-satellite 5.504A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.506 5.457A 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Radionavigation-satellite 5.504A			
14.4-14.47 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.506A 5.509A Space research (space-to-Earth) 5.504A			14.4-14.47 Fixed Mobile		
14.47-14.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A			14.47-14.5 Fixed Mobile US203 US342	14.47-14.5 FIXED-SATELLITE (Earth-to-space) NG183 Mobile-satellite (Earth-to-space) US203 US342	

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INTERNATIONAL FOOTNOTES

* * * * *

5.457B In the bands 5925-6425 MHz and 14-14.5 GHz, earth stations located on board vessels may operate with the characteristics and under the conditions contained in Resolution 902 (WRC-03) in Algeria, Saudi Arabia, Bahrain, Comoros, Djibouti, Egypt, United Arab Emirates, the Libyan Arab Jamahiriya, Jordan, Kuwait, Morocco, Mauritania, Oman, Qatar, the Syrian Arab Republic, Sudan, Tunisia and Yemen, in the maritime mobile-satellite service on a secondary basis. Such use shall be in accordance with Resolution 902 (WRC-03).

* * * * *

5.487 In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the Regions 1 and 3 Plan in Appendix 30.

5.487A Additional allocation: in Region 1, the band 11.7-12.5 GHz, in Region 2, the band 12.2-12.7 GHz and, in Region 3, the band 11.7-12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary systems and subject to application of the provisions of No. 9.12 for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. 5.43A does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to application of the provisions of No. 9.14 for coordination with stations of terrestrial services in Regions 1, 2 and 3. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix 30.

* * * * *

NON-FEDERAL GOVERNMENT (NG) FOOTNOTES

* * * * *

NG180 In the band 3700-4200 MHz (space-to-Earth) earth stations on vessels (ESVs) may be authorized to communicate with space stations of the fixed-satellite service and, while docked, may be coordinated for up to 180 days, renewable. ESVs in motion must operate on a secondary basis.

NG181 In the band 5925-6425 MHz (Earth-to-space), earth stations on vessels (ESVs) are an application of the fixed-satellite service (FSS) and may be authorized to communicate with space stations of the FSS on a primary basis.

NG182 In the bands 10.95-11.2 GHz and 11.45-11.7 GHz, earth stations on vessels (ESVs) may be authorized to communicate with U.S. earth stations through space stations of the fixed-satellite service but must accept interference from terrestrial systems operating in accordance with Commission Rules.

NG183 In the bands 11.7-12.2 GHz (space-to-Earth) and 14.0-14.5 GHz (Earth-to-space), earth stations on vessels (ESVs) are an application of the fixed-satellite service (FSS) and may be authorized to communicate with space stations of the FSS on a primary basis.

NG184 Land mobile stations in the bands 11.7-12.2 GHz and 14.2-14.4 GHz and fixed stations in the band 11.7-12.1 GHz that are licensed pursuant to Part 101, Subpart J of the Commission's Rules as of March 1, 2005 may continue to operate on a secondary basis until their license expires. Existing licenses issued pursuant to Part 101, Subpart J will not be renewed in the bands 11.7-12.2 GHz and 14.2-14.4 GHz.

* * * * *

PART 25 – SATELLITE COMMUNICATIONS

3. The authority citation for Part 25 continues to read as follows:

Authority: 47 U.S.C. 701-744. Interprets or applies Sections 4, 301, 302,303, 307, 309 and 332 of the Communications Act, as amended, 47 U.S.C. Sections 154, 301, 302, 303, 307, 309, 332, unless otherwise noted.

4. Part 25 is amended by adding new Section 25.221 and Section 25.222 to the Table of Contents to read as follows:

* * * * *

§ 25.221 Blanket Licensing provisions for Earth Stations on Vessels (ESV) receiving in the 3700-4200 MHz (space-to-Earth) frequency band and transmitting in the 5925-6425 MHz (Earth-to-space) frequency band, operating with Geostationary Satellites in the Fixed-Satellite Service.

§ 25.222 Blanket Licensing provisions for Earth Stations on Vessels (ESVs) receiving in the 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) frequency bands and transmitting in the 14.0-14.5 GHz (Earth-to-space) frequency band, operating with Geostationary Satellites in the Fixed-Satellite Service.

* * * * *

5. Section 25.115 is amended by adding paragraph (a)(2)(iii) to read as follows:

§ 25.115 Application for earth station authorizations.

*****

(a)(2)(iii) The earth station is not an ESV.

*****

6. Section 25.130 is amended by revising paragraph (a) to read as follows:

§ 25.130 Filing requirements for transmitting earth stations.

(a) Applications for a new or modified transmitting earth station facility shall be submitted on FCC Form 312, and associated Schedule B, accompanied by any required exhibits, except for those earth station applications filed on FCC Form 312EZ pursuant to § 25.115(a). All such earth station license applications must be filed electronically through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter. Additional filing requirements for Earth Stations on Vessels are described in §§ 25.221 and 25.222 of this part.

* * * * *

7. Section 25.201 is amended by adding the following definitions in alphabetical order to read as follows:

§ 25.201 Definitions.

* * * * *

Ambulatory. Not stationary. Baselines from which maritime boundaries are measured change with accretion- and erosion-caused ambulation of the boundaries themselves.

Baseline. The line from which maritime zones are measured, also known as the coast line. The baseline is a combination of the low-water line ("low-tide elevation") and closing lines across the mouths of inland water bodies. The baseline is defined by a series of baseline points. The baseline points are not just the low-water marks of the shore of mainland but also included islands and "low-water elevations" (*i.e.*, natural rocks). Baseline points are ambulatory, and thus, require adjustment from time-to-time by the U.S. Department of State's Baseline Committee.

Earth Station on Vessel ("ESV"). An ESV is an earth station onboard a craft designed for traveling on water receiving from and transmitting to fixed-satellite space stations.

Low-Tide Elevation. A naturally formed area of land that is surrounded by and above water at low tide but below water at high tide. Low-tide elevations serve as part of the coast line when they are within the breath of the territorial sea of the mainland (either uplands or inland waters) or an island. 1958 Convention on the Territorial Sea, Article 11.

* * * * *

8. Section 25.202 is amended by adding paragraph (a)(8) to read as follow:

§ 25.202 Frequencies, frequency tolerance and emission limitations.

* * * * *

(a)(8) The following frequencies are available for use by Earth Stations on Vessels (ESVs):

3700-4200 MHz (space-to-Earth)
5925-6425 MHz (Earth-to-space)
10.95-11.2 GHz (space-to-Earth)

11.45-11.7 GHz (space-to-Earth)
11.7-12.2 GHz (space-to-Earth)
14.0-14.5 GHz (Earth-to-space)

ESVs shall be authorized and coordinated as set forth in §§ 25.221 and 25.222 of this chapter. ESV operators, collectively, may coordinate up to 180 megahertz of spectrum in the 5925-6425 MHz (Earth-to-space) band for all ESV operations at any given location subject to coordination.

9. Section 25.203 is amended by revising paragraphs (a), (b), (d) and (k) and the introductory language in paragraph (c) to read as follow:

§ 25.203 Choice of sites and frequencies.

(a) Sites and frequencies for earth stations, other than ESVs, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected, to the extent practicable, in areas where the surrounding terrain and existing frequency usage are such as to minimize the possibility of harmful interference between the sharing services.

(b) An applicant for an earth station authorization, other than an ESV, in a frequency band shared with equal rights with terrestrial microwave services shall compute the great circle coordination distance contour(s) for the proposed station in accordance with the procedures set forth in § 25.251. The applicant shall submit with the application a map or maps drawn to appropriate scale and in a form suitable for reproduction indicating the location of the proposed station and these contours. These maps, together with the pertinent data on which the computation of these contours is based, including all relevant transmitting and/or receiving parameters of the proposed station that is necessary in assessing the likelihood of interference, an appropriately scaled plot of the elevation of the local horizon as a function of azimuth, and the electrical characteristics of the earth station antenna(s), shall be submitted by the applicant in a single exhibit to the application. The coordination distance contour plot(s), horizon elevation plot, and antenna horizon gain plot(s) required by this Section may also be submitted in tabular numerical format at 5° azimuthal increments instead of graphical format. At a minimum, this exhibit shall include the information listed in paragraph (c)(2) of this Section. An earth station applicant shall also include in the application relevant technical details (both theoretical calculations and/or actual measurements) of any special techniques, such as the use of artificial site shielding, or operating procedures or restrictions at the proposed earth station which are to be employed to reduce the likelihood of interference, or of any particular characteristics of the earth station site which could have an effect on the calculation of the coordination distance.

(c) Prior to the filing of its application, an applicant for operation of an earth station, other than an ESV, shall coordinate the proposed frequency usage with existing terrestrial users and with applicants for terrestrial station authorizations with previously filed applications in accordance with the following procedure:

* * * * *

(d) An applicant for operation of an earth station, other than an ESV, shall also ascertain whether the great circle coordination distance contours and rain scatter coordination distance contours, computed for those values of parameters indicated in § 25.251 (Appendix 7 of the ITU RR) for international coordination, cross the boundaries of another Administration. In this case, the applicant shall furnish the Commission copies of these contours on maps drawn to appropriate scale for use by the Commission in

effecting coordination of the proposed earth station with the Administration(s) affected.

* * * * *

(k) An applicant for operation of an earth station, other than an ESV, that will operate with a geostationary satellite or non-geostationary satellite in a shared frequency band in which the non-geostationary system is (or is proposed to be) licensed for feeder links, shall demonstrate in its applications that its proposed earth station will not cause unacceptable interference to any other satellite network that is authorized to operate in the same frequency band, or certify that the operations of its earth station shall conform to established coordination agreements between the operator(s) of the space station(s) with which the earth station is to communicate and the operator(s) of any other space station licensed to use the band.

10. Section 25.204 is amended by adding paragraph (h) and (i) to read as follows:

§ 25.204 Power limits.

* * * * *

(h) ESV transmissions in the 5925-6425 MHz (Earth-to-space) band shall not exceed an EIRP spectral density towards the radio-horizon of 17 dBW/MHz, and shall not exceed an EIRP towards the radio-horizon of 20.8 dBW. The ESV network shall shut-off the ESV transmitter if the EIRP spectral density towards the radio-horizon or EIRP towards the radio-horizon are exceeded.

(i) Within 125 km of the TDRSS sites identified in § 25.222(d) of this chapter, ESV transmissions in the 14.0-14.2 GHz (Earth-to-space) band shall not exceed an EIRP spectral density towards the horizon of 12.5 dBW/MHz, and shall not exceed an EIRP towards the horizon of 16.3 dBW.

11. Section 25.205 is revised to read as follows:

§ 25.205 Minimum angle of antenna elevation.

(a) Earth station antennas shall not normally be authorized for transmission at angles less than 5° measured from the horizontal plane to the direction of maximum radiation. However, upon a showing that the transmission path will be seaward and away from land masses or upon special showing of need for lower angles by the applicant, the Commission will consider authorizing transmissions at angles between 3° and 5° in the pertinent directions. In certain instances, it may be necessary to specify minimum angles greater than 5° because of interference considerations.

(b) ESVs making a special showing requesting angles of elevation less than 5° measured from the horizontal plane to the direction of maximum radiation pursuant to (a) of this Section must still meet the EIRP and EIRP density towards the horizon limits contained in § 25.204(h) and (i) of this chapter.

12. Part 25 is amended by adding new Section 25.221 to read as follows:

§ 25.221 Blanket Licensing provisions for Earth Stations on Vessels (ESV) receiving in the 3700-4200 MHz (space-to-Earth) frequency band and transmitting in the 5925-6425 MHz (Earth-to-space) frequency band, operating with Geostationary Satellites in the Fixed-Satellite Service.

(a) All applications for licenses for ESVs transmitting in the 5925-6425 MHz (Earth-to-space) bands to geostationary-orbit satellites in the fixed-satellite service shall provide sufficient data to demonstrate that the ESV operations meet the following criteria, which are ongoing requirements that govern all ESV licensees and operations in these bands:

(1) The off-axis EIRP spectral density for co-polarized signals, emitted from the ESV, in the plane of the geostationary satellite orbit as it appears at the particular earth station location (*i.e.*, the plane determined by the focal point of the antenna and the line tangent to the arc of the geostationary satellite orbit at the position of the target satellite), shall not exceed the following values:

$26.3 - 25\log(\theta)$ dBW/4kHz	for	$1.0° \leq \theta \leq 7.0°$
5.3 dBW/4kHz	for	$7.0° < \theta \leq 9.2°$
$29.3 - 25\log(\theta)$ dBW/4kHz	for	$9.2° < \theta \leq 48°$
-12.7 dBW/4kH	for	$48° < \theta \leq 180°$

(2) In all other directions, the off-axis EIRP spectral density for co-polarized signals emitted from the ESV shall not exceed the following values:

$29.3 - 25\log(\theta)$ dBW/4kHz	for	$1.0° \leq \theta \leq 48°$
-12.7 dBW/4kHz	for	$48° < \theta \leq 180°$

(3) For $\theta > 7°$, the values given in paragraphs (a)(1) of this Section may be exceeded by no more than 10% of the earth station antenna sidelobes, provided no individual sidelobe exceeds the criteria given by more than 3 dB.

(4) In all directions, the off-axis EIRP spectral density for cross-polarized signals emitted from the ESV shall not exceed the following values:

$16.3 - 25\log(\theta)$ dBW/4kHz	for	$1.8° \leq \theta \leq 7.0°$
-4.7 dBW/4kHz	for	$7.0° < \theta \leq 9.2°$

Where θ is the angle in degrees from the axis of the main lobe.

(5) For non-circular ESV antennas, the major axis of the antenna will be aligned with the tangent to the geostationary satellite orbital arc at the target satellite point, to the extent required to meet specified off-axis EIRP criteria.

(6) A pointing error of less than 0.2°, between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna.

(7) All emissions from the ESV shall automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°, and transmission will not resume until such angle is less than 0.2°.

(8) There shall be a point of contact in the United States, with phone number and address included with the application, available 24 hours a day, seven days a week, with authority and ability to cease all emissions from the ESVs, either directly or through the facilities of a U.S. Hub or a Hub located in another country with which the U.S. has a bilateral agreement that enables such cessation of emissions.

(9) ESVs that exceed the radiation guidelines of Section 1.1310 Radiofrequency radiation exposure limits must provide, with their environmental assessment, a plan for mitigation of radiation exposure to the extent required to meet those guidelines.

(10) ESV operators transmitting in the 5925-6425 MHz (Earth-to-space) frequency bands to geostationary satellites in the fixed-satellite service shall not seek to coordinate, in any geographic location, more than 36 MHz of uplink bandwidth on each of no more than two GSO FSS satellites.

(11) There shall be an exhibit included with the application describing the geographic area(s) in which the ESVs will operate.

(12) ESVs shall not operate in the 5925-6425 MHz (Earth-to-space) and 3700-4200 MHz (space-to-Earth) frequency bands on vessels smaller than 300 gross tons.

(b) Applications for ESV operation in the 5925-6425 MHz band to geostationary satellites in the fixed-satellite service must include, in addition to the particulars of operation identified on Form 312, and associated Schedule B, the following data, for each earth station antenna type:

(1) A series of EIRP density charts or tables, calculated for a production earth station antenna, based on measurements taken on a calibrated antenna range at 6.0 GHz, with the off-axis EIRP envelope set forth in paragraphs (a)(1) through (a)(4) of this Section superimposed, as follows:

(i) showing off-axis co-polarized EIRP spectral density in the azimuth plane, for off-axis angles from minus 10° to plus 10°and from minus 180° to plus 180°.
(ii) showing off-axis co-polarized EIRP spectral density in the elevation plane, at off-axis angles from 0° to plus 30°.
(iii) showing off-axis cross-polarized EIRP spectral density in the azimuth plane, at off-axis angles from minus 10° to plus 10°.
(iv) showing off-axis cross-polarized EIRP spectral density in the elevation plane, at off-axis angles from minus 10° to plus 10°.

Or

(2) A series of gain charts or tables, for a production earth station antenna, measured on a calibrated antenna range at 6.0 GHz, with the Earth station antenna gain envelope set forth in § 25.209(a) and (b) superimposed, for the same planes and ranges enumerated in paragraphs (b)(1)(i) through (b)(1)(iv) of this Section, that, combined with input power density entered in schedule B, demonstrates that off-axis EIRP spectral density envelope set forth in paragraphs (a)(1) through (a)(4) of this Section will be met.

Or

(3) A certification that the antenna conforms to the gain pattern criteria of § 25.209(a) and (b), that, combined with input power density entered in schedule B, demonstrates that the off-axis EIRP spectral density envelope set forth in paragraphs (a)(1) through (a)(4) of this Section will be met.

(c) ESVs receiving and transmitting in the 3700-4200 MHz (space-to-Earth) and 5925-6425 MHz (Earth-to-space) frequency bands shall operate with the following provisions:

(1) For each ESV transmitter, a record of the ship location (*i.e.*, latitude/longitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a period of not less than 1 year. Records will be recorded at time intervals no greater then every 20 minutes while the ESV is transmitting. The ESV operator will make this data available upon request to a coordinator, fixed system operator, fixed-satellite system operator, or the Commission within 24 hours of the request.

(2) ESV operators communicating with vessels of foreign registry must maintain detailed information on each vessels country of registry and a point of contact for the relevant administration responsible for licensing ESVs.

(3) ESV operators shall control all ESVs by a Hub earth station located in the United States, except that an ESV on U.S.-registered vessels may operate under control of a Hub earth station location outside the United States provided the ESV operator maintains a point of contact within the United States that will have the capability and authority to cause an ESV on a U.S.-registered vessel to cease transmitting if necessary.

(4) ESVs, operating while docked, that complete coordination with terrestrial stations in the 3700-4200 MHz band in accordance with § 25.251, shall receive protection from such terrestrial stations in accordance with the coordination agreements, for 180 days, renewable for 180 days.

(d) ESVs in motion shall not claim protection from harmful interference from any authorized terrestrial stations or lawfully operating satellites to which frequencies are either already assigned, or may be assigned in the future in the 3700-4200 MHz (space-to-Earth) frequency band.

(e) ESVs operating in the 5925-6425 MHz (Earth-to-space) band, within 200 km from the baseline of the United States, or within 200 km from a fixed service offshore installation, shall complete coordination prior to operation. The coordination method and the interference criteria objective shall be determined by the frequency coordinator. The details of the coordination shall be maintained and available at the frequency coordinator, and shall be filed with the Commission to be placed on Public Notice. Operation of each individual ESV may commence immediately after the Public Notice is released that identifies the notification sent to the Commission. Continuance of operation of that ESV for the duration of the coordination term shall be dependent upon successful completion of the normal public notice process. If any objections are received to the coordination prior to the end of the 30-day comment period of the Public Notice, the licensee shall immediately cease operation of that particular station until the coordination dispute is resolved and the ESV licensee informs the Commission of the resolution.

(f) ESV operators must automatically cease transmission if the ESV operates in violation of the terms of its coordination, including, but not limited to, conditions related to speed of the vessel or if the ESV travels outside the coordinated area, if within 200 km from the baseline of the United States, or within 200 km from a fixed service offshore installation. Transmission may be controlled by the ESV network. The frequency coordinator may decide whether ESV operators should automatically cease transmissions if the vessel falls below a prescribed speed within a prescribed geographic area.

13. Part 25 is amended by adding new Section 25.222 to read as follows: